Remarks:

Claims 42-48 and 50-93 are now pending in this application. Applicants have amended claims 42-48, 50-57, 60-63, 64, 67, 69, 76, 77, 83-88, 91, and 92 to clarify the present invention. Applicants respectfully request favorable reconsideration of this application.

Applicants have amended claim 42 as suggested by the Examiner. Accordingly, Applicants respectfully request withdrawal of the objection to claim 42.

The Examiner rejected claims 42-93 under 35 U.S.C. § 112, second paragraph. Applicants have amended the claims to ensure that antecedent basis exists for all elements and that relationships among the elements is clear. Applicants submit that all claims comply with 35 U.S.C. § 112, second paragraph, and respectfully request withdrawal of this rejection.

The Examiner rejected claims 42, 69, 83, and 92 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,610,501 to Nelson et al. The Examiner rejected claims 42, 69, 83, and 93 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 5,461,300 to Kappenman. The Examiner rejected claim 42 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 6,906,434 to Koeppe et al. in view of U.S. patent 6,680,602 to Iyoda et al. The Examiner rejected claims 42-46, 48, 50, 58, 66-74, and 77-80 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view of U.S. patent 6,924,565 to Wilkins et al. The Examiner rejected claims 83-87 and 90-93 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view of U.S. patent 6,906,434 to Vithayathil et al. The Examiner rejected claim 82 under

35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 6,925,385 to Ghosh et al. The Examiner rejected claims 47, 75, and 88 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 6,577,108 to Hubert et al. The Examiner rejected claims 49 and 60 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 4,081,741 to Palmer. The Examiner rejected claims 51 and 52 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 5,166,597 to Larsen et al. The Examiner rejected claims 53 and 54 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 6,011,381 to Andrei. The Examiner rejected claims 55 and 57 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent publication 2004/0012472 to Sasse et al. The Examiner rejected claim 56 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 4,591,963 to Retotar. The Examiner rejected claims 59 and 76 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of U.S. patent 4,075,675 to Buckett et al. The Examiner rejected claims 64, 65, and 89 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view Wilkins et al. and further in view of Watson et al. The Examiner rejected claims 61-63 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Koeppe et al. and Wilkins et al. The Examiner rejected claim 88 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view of Vithayathil et al. and further in view of Hubert et al. The Examiner rejected claim 89 under 35 U.S.C. § 103(a) as being unpatentable over Koeppe et al. in view of Vithayathil et al. and further in view of Watson et al.

Nelson does not disclose the invention recited in claims 42, 69, 83, and 92 since, among other things, Nelson does not disclose a high voltage AC transmission system that includes tap changers. Rather, in col. 1 Nelson discloses that tap-changers are utilized in prior art arrangement known as Phase-Angle Regulator PAR. Nelson does not describe or illustrate tap-changers. In fact, Nelson describes tap-changers as so slow speed that they are "unusable for all but steady-state concerns".

Nelson discloses a dynamic voltage regulator connected to an ac transmission line 3 that includes an inverter 11 that injects into the line 3 through a series transformer 13 an ac voltage with controllable magnitude and controllable phase angle, as described at col. 4, lines 49-60. Real power is provided to the inverter 11 from the line 3 via a shunt transformer 21 and a rectifier 19, as described at col. 4, line 41. Nelson does not disclose utilizing tap changers either for the series transformer or for the shunt transformer. This means that the AC voltage taken from the line 3 at point 5 or injected into the line at point 7 are only divided or multiplied by the ratio of the corresponding transformer 21 or 13, respectively, so that the AC voltage of the line 3 is controlled continuously.

In contrast to Nelson, the claimed invention includes discrete adjustment of a magnitude of a line voltage, which is achieved in a simple and cost effective way. The claimed invention includes two shunt-connected transformers, each including a tap changer. The claimed invention does not require an inverter or other power electronic circuitry. This considerably reduces costs. Tap changers are very well known in the art as devices that are used to adjust the turn ratio and,

thereby, the voltage transformation level of a corresponding transformer, as described in paragraph 0051 of the published application. Since a tap changer operates turn-by-turn, the voltage level is adjusted stepwise. In other words, a tap changer adjusts the voltage magnitude and makes the adjustment in a discrete manner.

Kappenman does not disclose the claimed invention since, among other things, Kappenman does not disclose a high voltage AC transmission cable system that includes two transformers arranged at ends of an AC transmission cable and two tap-changers to vary the voltage transformation of the transformers according to an operating voltage. Rather, Kappenman discloses a phase angle regulator to regulate the voltage level. The elements 33a and 34a that the examiner asserts are equivalent to the transformers of the claimed invention are just coils of a single transformer-the three phase transformer unit 18, as described at col. 6, lines 36-57. At col. 3, lines 3-14, Kappenman discloses tap-changers only with respect to the prior art and not as part of the invention illustrated in Fig. 1. Accordingly, the regulator of Kappenman does not disclose the claimed invention.

In view of the above, neither Nelson et al. nor Kappenman discloses all elements of the present invention as recited in claims 42, 69, 83, 92 or 93. Since Nelson et al. nor Kappenman discloses all elements of the present invention as recited in claims 42, 69, 83, 92 or 93, the invention recited in claims 42, 69, 83, 92 or 93 is not properly rejected under 35 U.S.C. § 102(b). For an anticipation rejection under 35 U.S.C. § 102(b) no difference may exist between the claimed invention and the reference disclosure. See Scripps Clinic and Research Foundation v. Genentech, Inc., 18 U.S.P.Q. 841 (C.A.F.C. 1984).

Along these lines, anticipation requires the disclosure, in a cited reference, of each and every recitation, as set forth in the claims. See Hodosh v. Block Drug Co., 229 U.S.P.Q. 182 (Fed. Cir. 1986); Titanium Metals Corp. v. Banner, 227 U.S.P.Q. 773 (Fed. Cir. 1985); Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986); and Akzo N.V. v. U.S. International Trade Commissioner, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986).

The combination of Koeppe et al. and any of Iyoda et al., Wilkins et al., Vithayathil et al., Ghosh et al., Hubert et al., Palmer, Larsen et al., Andrei, Sasse et al., Retotar, or Buckett et al. do not suggest the claimed invention since, among other things, the combinations do not suggest an AC transmission cable having two ends, a transformer with variable voltage transformation arranged in shunt connection at each end of the AC transmission cable, two voltage control members for controlling said two transformers in a coordinated manner to regulate an operating voltage level of AC transmission cable and two tap-changers, each of which is operatively connected to one of the two voltage control members and to a corresponding one of the transformers to vary the voltage transformation of the transformer according to an operating voltage. Along these lines, Koeppe et al. does not suggest any tap-changers. Therefore, none of the combinations of references suggests the invention recited in claims 42-80 and 82-93.

In view of the above, the references relied upon in the office action, whether considered alone or in combination, do not disclose or suggest patentable features of the claimed invention. Therefore, the references relied upon in the office action, whether considered alone or in combination, do not anticipate the present invention or make the claimed invention obvious.

Accordingly, Applicants submit that the claimed invention is patentable over the cited references.

If an interview would advance the prosecution of this application, Applicants respectfully urge the Examiner to contact the undersigned at the telephone number listed below.

The undersigned authorizes the Commissioner to charge insufficient fees and credit overpayment associated with this communication to Deposit Account No. 22-0261.

Respectfully submitted,

Date: July 7, 2009

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